

BITNYY, M.A., inzh.

Unit for electromagnetic treatment of water. Bezop. truda v  
prom. 3 no.9:22-23 S '59.  
(MIRA 13:2)

1. Alma-Atinskiy zavod tyashelogo mashinostroyeniya.  
(Feed-water purification)

"APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205410019-9

BITNYY, P. I., inzhener; YEVREYMOV, D. V., inzhener.

Some results of the consolidation of the truck transportation department of  
building construction organisations. Mekh.stroi. 10 no.11:31-32 N '53.  
(MIRA 6:11)  
(Construction industry)

APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205410019-9"

BITO, Istvan; SZELMI, Bela

Coprolith simulating tumor and causing partial intestinal obstruction. Orv. hetil. 98 no.29:800-803 21 July 57.

1. A Bacs-Kiskun Megye Tanacsra Korhaza Sebeszeti Osztalyanak (foorvos: Kiss, Dezső, dr.) es Rontgenlaboratoriumnak (foorvos: Turcsanyi Mie Vilmos, dr.) kozleménye.

(INTESTINES, calculi

coprolith simulating tumor & causing partial intestinal obstr., x-ray diag. (Hun))

(INTESTINAL OBSTRUCTION, etiol. & pathogen.

coprolith causing partial obstr., x-ray diag. (Hun))

S/057/62/032/007/013/013  
B154/B104

AUTHORS: Lakatosh, G., and Bito, I. (Prague)

TITLE: Influence of the external resistance on the movement of layers in the positive column of discharges

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 7, 1962, 902-903

TEXT: The movement of discharge layers in the positive column as affected by external parameters has already been discussed in the papers cited (H. Yoshimoto, et al. Jl. of the Phys. Soc. Jap., 13, 734, 1958; L. Pekarek. Czechosl. Jl. Phys., 8, 32, 1958; A. V. Nedospasov, et al., ZhTF, XXX, 125, 1960). In the present paper the amounts of the amplitude of brightness, velocity, wavelength, and frequency of these layers are examined as functions of the external resistance. Experiments were carried out using a discharging tube (oxide cathode, nickel anode, diameter 36 mm, length 1200 mm, temperature of cooling water  $25 \pm 0.1^{\circ}\text{C}$ ) filled with argon or mercury vapor (pressure 3 mm Hg). The parameters were determined following the methods described by H. Yoshimoto et al. The results obtained for a constant discharging current of 100 ma with

Card 1/2

Influence of the external resistance ...

S/057/62/032/007/013/013  
B154/B104

negligible inductivity, show that in the range of 1000-3000  $\Omega$  with increasing external resistance the amplitude of brightness increases linearly, the velocity and the wavelength decrease linearly, the frequency remains constant. Frequency measurements for a constant discharging current of 20 ma and an external resistance of 10  $\Omega$  having an inductivity of 1.5 henry delivered frequency of the layer of 498 cps (in the case in which the inductivity was used) and 541 cps (in the case in which the inductivity was not used) respectively. The authors conclude from their results that in the range considered, the value of the external resistance influences the amplitude of brightness as well as the velocity and the wavelength of the layers, but not their frequency. There is 1 figure.

SUBMITTED: November 21, 1960

Card 2/2

"APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205410019-9

DITO, J

✓ Effect of anode perturbation on the positive column of  
low-pressure gas discharges." G. Szigeti and J. Bitó. *Acta  
Phys. Acad. Sci. Hung.* 11, 109 (1960) (in German). The re-  
sults obtained by Wojaczek (preceding abstract), by Coulter,  
*et al.* (cf. CA 53, 6772*i*), and by other investigators are con-  
firmed by recent and earlier expts. C. Olivier-Rutgers

3

V,  
11 Forschungsinstitut für Nachrichtentechnische Industrie, Budapest (for Bitó)

APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205410019-9"

24.6714

38192  
S/058/62/000/004/147/160  
A061/A101

AUTHORS: Lakatos, G., Bit6, J.

TITLE: Moving striations in low-pressure mercury discharges

PERIODICAL: Referativnyy zhurnal, Fizika, no. 4, 1962, 60, abstract 4Zh408  
("Acta phys. Acad. scient. hung.", 1961, v. 13, no. 2, 193 - 201,  
English; Russian summary)

TEXT: The motion of luminescent striations, due to the wave-like displacement of the space charge, was observed in the positive discharge column at a current of 20 - 400 ma, a pressure of 1 - 4 mm Hg, and a wall temperature in the discharge tube maintained at a constant  $25 \pm 0.1$  C. A photoelectric cell, separated from the discharge tube by a slit-like diaphragm, and adjustable along the tube axis, was used to measure various characteristics of the moving striations. The amplified current of the photoelectric cell was fed to the vertical deflecting plates of the oscilloscope. The change of the voltage applied to the tube, leading to the appearance of the luminescent striation in it, was fed to the horizontal deflecting plates. A standing wave, stable in time, was observed on the

Card 1/2

Moving striations in low-pressure mercury discharges

S/058/62/000/004/147/160  
A061/A101

oscilloscope screen at the given discharge parameters. When the position of the photoelectric cell was changed, the signal amplitude also changed in correspondence to the phase observed in the striation concerned. Thus, the wavelength of the moving striation could easily be determined by shifting the photoelectric cell along the tube axis. The frequency of the striation oscillations was determined by the method of Lissajous figures. The velocity of the moving striations was determined from the known frequency and the wavelength. Their frequency was determined at different Hg-vapor pressures and discharge currents. The family of curves giving the dependence of the velocity of propagation of the moving striations ( $10^3$ - $10^4$  cm/sec) on discharge current and pressure was plotted from the data obtained. Experiments conducted with other tubes of similar shape at the same pressures yielded other values for the velocity of the moving striations. There are 10 references.

V. Dubinskiy

[Abstracter's note: Complete translation]

Card 2/2

24.6714

S/058/62/000/004/146/160  
A061/A101

AUTHORS: Lakatos, G., Bitó, J.

TITLE: Effect of external resistance on the moving striations of the positive column

PERIODICAL: Referativnyy zhurnal, Fizika, no. 4, 1962, 60, abstract 4Zh407  
("Acta phys. Acad. scient. hung.", 1961, v. 13, no. 2, 245 - 247,  
English)

TEXT: The results of an investigation of a discharge tube filled with a mixture of Ar and Hg vapors up to a pressure of 3 mm Hg at a wall temperature of  $(25 \pm 0.1)^\circ\text{C}$  and a discharge current of 100 ma are considered. The dependence of luminosity, the velocities of moving striations, of their wavelength and frequency on the magnitude of the inductionless resistance of the external circuit is indicated. The effect of inductance of the external circuit on the change of frequency is shown. /B

[Abstracter's note: Complete translation]

V. Dubinskiy

Card 1/1

9.4120

S/194/62/000/009/073/100  
D295/D308

AUTHORS: Lakatos, G. and Bit6, J.

TITLE: The time dependence of some parameters of a.c. gas discharge

PERIODICAL: Referativnyy zhurnal, Avtomatika i radioelektronika, no. 9, 1962, 50, abstract 9Zh298 (Acta phys. Acad. Scient. hung.) v. 13, no. 3, 1961, 271-279 (Eng.; summary in Rus.)

TEXT: An oscillographic method was used to measure the time dependence of electric field strength, electron temperature, electron concentration, recombination rate, and cathode and anode voltage drop for an a.c. discharge in a mixture of Hg and Ar vapors in a discharge tube with self-incandescent oxide cathode. The diameter of the discharge tube was 38 mm, its length 1130 mm, Ar pressure 3 mm Hg, ambient temperature 22.5 - 24°C. Fajt and Koncz's a.c. probe method (J. Fajt and J. Koncz, Meeting on Gas Discharges, Belatonvilágos, 1958), which is based on Langmuir's method, was used in the

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S/194/62/000/009/073/100  
D295/D308

The time dependence ...

investigations. The tube contained three probes of 2 mm length and 0.2 mm diameter (one in the central part of the positive column of the discharge, and the two others at 400 mm distance on both sides of the first). The tube was fed by alternating current with 50 c/s frequency. The discharge current amounted to 430 mA. The measurements results are given in the form of graphs. *[Abstracter's note: Complete translation.]* ✓

Card 2/2

LAKATOSH, G. [Lakatos, G.] (Praga); BITO, I. [Bito, J.] (Praga)

Effect of external resistance on the motion of shock waves  
of a positive discharge column. Zhur.tekh.fiz. 32 no.7:900-  
903 Jl '62. (MIRA 15:8)  
(Electric discharges through gases)

S/058/63/000/003/027/104  
A062/A101

AUTHOR: Bitó, János

TITLE: On the process of lamination in low pressure discharges in gases and vapors

PERIODICAL: Referativnyy zhurnal, Fizika, no. 3, 1963, 13, abstract 3G76  
("Magyar fiz. folyoirat", 1962, v. 10, no. 4, 303 - 315, Hungarian)

TEXT: A survey report on the published works about processes in fixed and mobile layers of the positive column of a discharge as depending on various internal and external parameters of the plasma. There are 92 references.

V. Shevera

[Abstracter's note: Complete translation]

Card 1/1

BITO, Janos

Some more important methods for investigating low-pressure gas and steam discharges. Magy fiz folyoir 10 no.5:411-417 '62.

1. Hiradastechnikai Ipari Kutato Intezet, Budapest.

BITO, Janos

Data on the stratification processes occurring in low-pressure  
gas and vapor discharges. Magy fiz folyoir 10 no.4:303-315  
'62.

1. Hiradastechnikai Ipari Kutato Intezet.

BITO, J.

On the pressure-dependence of some parameters of a.c. discharges. Acta phys Hung 16 no.3: 275-288 '63.

1. Industrial Research Institute for Telecommunication Technique, Budapest. Presented by Gyorgy Szilgeti.

BITO, Janos

Analysis of certain phenomena of low-pressure gas discharges.  
Magy hir techn ll no.1:23-25 F'60.

1. Hiradastechnikai Ipari Kutato Intezet.

BITO, Janos, dr., tudomanyos munkatars

Cold light. Term tud kozl 8 no.7:317-320 Jl '64.

1. Research Institute of the Telecommunication Industry, Budapest.

LAKATOS, Gyorgy; HITC, Janos

Effect of the internal resistance on the moving layers of  
the positive column of gas discharge. Magy fiz folyoir  
12 no.1:9-10 '64.

1. Research Institute of the Telecommunication Industry,  
Budapest.

BITO, Janos

Vibrations occurring on the anodic side of low-pressure  
direct-current gas discharges. Magy fiz folyoir 12 no.1:  
63-69 '64.

1. Research Institute of the Telecommunication Industry,  
Budapest.

BITO, Janos

Pressure dependence of certain parameters of alternating current  
gas discharges. Magy fiz folyoir 12 no. 2:111-120 '64.

1. Research Institute of the Telecommunication Industry, Budapest.

BITO, Janos; SZEMZO, Imre

Method for measurement by sounding and its application in  
the field of alternating current discharges. Magy fiz  
folyoir 12 no. 2:121-132 '64.

1. Research Institute of the Telecommunication Industry,  
Budapest.

BITO, J.

Correlations existing among certain parameters of direct current mercury vapor discharges. Magy fiz folyoir 12 no.3:297-309 '64.

1. Research Institute of the Telecommunication Industry, Budapest.

LAKATOS, Gy.; BITO, J.

Effect of the ambient temperature on the mobile stratification  
processes of the low-temperature discharges. Magy fiz folyoir 12  
no.3:311-319 '64.

1. Research Institute of the Telecommunication Industry, Budapest.

LAKATOS, Gyorgy; BITU, Janos

Role of the auxiliary electrode applied beside the cathode  
of alternating current gas discharges. Magy fiz folyoir  
12 no.4:337-341 '64.

Effect of some external and internal parameters on the  
mobile stratification. Ibid.:343-348

Evaporation velocity of the oxide cathode of stationary  
discharges. Ibid.:349-352

Some parameters of the mobile stratifications. Ibid.:369-378

1. Research Institute of the Telecommunication Industry,  
Budapest.

BITO, Janos

Anode vibrations of discharges. Magy fiz folyoir 12  
no.4:353-367 '64.

1. Research Institute of the Telecommunication Industry,  
Budapest.

SZIGETI, Gyorgy; LAKATOS, Gyorgy; BITO, Janos

Calorimetric method for determining the anode fall. Magy  
fiz folyoir 12 no.4:379-385 '64.

1. Research Institute of the Telecommunication Industry,  
Budapest.

LAKATOS, Gyorgy, dr.; BITO, Janos, dr.

Influence of certain parameters on the luminous power and efficiency  
of luminescent tubes. Villamossag 12 no.5:146-148 My '64.

1. Research Institute of the Telecommunication Industry, Budapest.

LAKATOS, G.; BITO, J.

On the role of the auxiliary electrode applied beside the cathode  
in a.c. discharges. Acta phys Hung 16 no. 4:327-332 '64.

1. Industrial Research Institute for Telecommunication Technique,  
Budapest. Presented by G. [Gyorgy] Szigeti.

LAKATOS, G.; BITO, J.

The influence of the ambient temperature on the moving striation processes of low pressure discharges. Acta phys Hung 17 no.3:231-282 '64.

1. Industrial Research Institute of Telecommunication Technique, Budapest. Presented by G. Szigeti.

BITO, J.

Anode oscillations of discharges. Acta phys Hung 17 no.3:  
283-301 '64.

1. Industrial Research Institute of Telecommunication  
Technique, Budapest. Presented by G. Szigeti.

BITO, J.

On the relations between some of the parameters of the direct current mercury vapor discharges. Acta phys Hung 17 no.4:403-420 '64.

l. Industrial Research Institute of Telecommunication Technique,  
Budapest. Presented by Gyorgy Szigeti.

SZIGETI, Gyorgy; LAKATOS, G.; BITO, J.

A calorimetric method for the determination of the anode fall of discharges.  
Acta phys Hung 17 no.4:457-465 '64.

l. Industrial Research Institute of Telecommunication Technique,  
Budapest.

BITC, J.

~~On the anodic side oscillations of low pressure DC gas discharges.~~  
On the anodic side oscillations of low pressure DC gas discharges.  
Acta phys Hung 18 no.1:1-9 '64.

I. Industrial Research Institute for Telecommunication Technique,  
Budapest. Submitted October 10, 1963.

LAKATOS, G.; BITO, J.

Some parameters of the moving striations. Acta phys Hung 18  
no.1:27-38 '64.

1. Industrial Research Institute for Telecommunication Technique,  
Budapest. Submitted December 17, 1963.

LAKATOS, Gyorgy, tudomanyos fomunkatars; BITO, Janos, dr., tudomanyos munkatars

Tests for increasing the specific surface load in fluorescent lamps. Elektrotehnika 57 no.9:425-427 S '64.

1. Research Institute of Telecommunication Engineering Industry, Budapest, IV., Vaci ut 77.

LAKATOS, Gyorgy, BITO, Janos, dr.

Tests for determining the energy balance of 40 W fluorescent tubes. Villamossag 13 no. 3:78-80 Mr '65.

1. Research Institute of Electric Industry, Budapest (for Lakatos). 2. Research Institute of Telecommunication Engineering Industry, Budapest (for Bito).

BITOSSI, Renato

The fate of the world is in the hands of the peoples.  
Sov. profsoiuzy 18 no.21:40-42 N '62. (MIRA 15:11)

1. Predsedatel' Vsemirnoy Federatsii professional'nykh  
soyuzov.

(Peace)  
(World politics)  
(World Federation of Trade Unions--Congresses)

S/564/57/000/000/017/029  
D258/D307

AUTHORS:

Belyayev, L. M., Bitovskiy, B. V., and  
Dobrzhanskiy, G. F.

TITLE:

Methods of growing luminescent crystals for  
scintillation counters

SOURCE:

Rost kristallov; doklady na Pervom soveshchanii  
po rostu kristallov, 1956 g. Moscow, Izd-vo  
AN SSSR; 1957, 249-261

TEXT: A brief survey of crystalline organic and inorganic  
scintillations is first given, presenting the data in tabular  
form. An apparatus is described and illustrated in which crystals  
of naphthalene, diphenylacetylene, dibenzyl, and other compounds  
may be grown, indicating the general procedure, and an apparatus  
for stilbene crystals is proposed. The difficulties of growing  
large anthracene crystals are discussed, and a description is  
given of a suitable apparatus. For inorganic scintillators, the

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Methods of growing...

S/564/57/000/000/017/029  
D258/D307

authors give an account of the modifications made by them to the apparatus of Kyropolous for growing crystals of alkali halides, and of a vacuum equipment used for calcium tungstate. The experimental assistance of Z. B. Perekalina, G. S. Belikova, V. V. Chadayeva, K. S. Chernyshev, M. V. Koshuashvili, V. A. Perl'steyn, and I. N. Tsigler is acknowledged. There are 8 figures and 2 tables.

Card 2/2

CA BITOV<sup>T</sup>, Z. A.

Interaction of zinc with pyramidone thiocyanato reagent.  
Z. A. Bitovt, *Zhar. Anal. Khim.* 4, 173-4 (1949).—To  
prep. the reagent dissolve 1 g. of pyramidone and 5 g.  
of KCNS in 40 ml. of H<sub>2</sub>O and add 10 ml. of 1.0 N AcOH.  
To test for Zn add 2-3 drops of the reagent to a few drops  
of tested soln. In the presence of Zn a white cryst.  
(prisms) ppt. forms. The compd. is probably [Cu(H<sub>2</sub>O)<sub>4</sub>]<sub>2</sub>[Zn(CNS)<sub>4</sub>]. By this test 7 γ of Zn can be de-  
tected in 1 ml. of soln. Ba, Ca, Mg, Sr, Al, Cr<sup>+++</sup>  
Mn<sup>++</sup>, As<sup>++++</sup>, and As<sup>+++++</sup> in concns. up to 0.5 N do  
not interfere. To test for Zn in ore or alloy dissolve a  
sample in HCl, neutralise the soln. with NaOH to appear-  
ance of a ppt., dissolve it with AcOH, and add the reagent.  
M. Hesse

BITCOV, Z. A.

Chemical Abst.  
Vol. 48 No. 8  
Apr. 25, 1954  
Analytical Chemistry

Determination of small quantities of zinc in the atmosphere of industrial establishments. S. I. Gusev and Z. A. Bitcov (Molotov Med. Inst.), Gigrius & Sonu, 1953, No. 17, 98-101. Detn. of Zn in the atm. is made by turbidimetric detn. of colorless suspensions formed on treatment of a soln. contg. Zn diantipyrilmethylmethane-HCl in the presence of the CNS ion at pH 2-2.5; the ppt. is  $(\text{C}_6\text{H}_5\text{O}_2)_2\text{N}^+ \text{Zn}^{2+}$ . Treat moist antioxyrine (5 g.) with 1-2 ml. HCl and 1-2 ml. AcOH, heat on a steam bath and cool; heat the product after crystn. in a desiccator. Dil. 1 ml. of 2% soln. with 99 ml.  $\text{H}_2\text{O}$  contg. 1.82 g.  $\text{NH}_4\text{CNS}$ . Evap. the soln. contg. Zn in dil. HCl to dryness with 1 ml.  $\text{H}_2\text{SO}_4$  until  $\text{H}_2\text{SO}_4$  fumes cease; take up the residue in 0.3 ml.  $\text{N HCl}$ , 2 ml. 8% thiourea, 0.03 g. ascorbic acid, and 7.7 ml. pure  $\text{H}_2\text{O}$  (total vol. 10 ml.). To 5 ml. of this soln. add 9 ml. of the reagent, allow to stand 15 min., and measure in a photoelectric manner. The presence of  $\text{Cu}^{2+}$  or  $\text{Fe}^{2+}$  even in relatively large amounts does not interfere. G. M. Kosolapoff

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BITOV~~T~~, Z. A.

1. GUSEV, S. I.; BITOV~~T~~, Z. A.
2. USSR (600)
4. Zinc
7. New method of determining zinc in food products. Vop. pit. 12, No. 2, 1953.
9. Monthly List of Russian Accessions, Library of Congress, April 1953. Unclassified.

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CIA-RDP86-00513R000205410019-9"

BITOVT, Z. A.

Chemical Abst.  
Vol. 48 No. 3  
Feb. 10, 1954  
Biological Chemistry

Photonephelometric determination of zinc in blood. S. I. Gusev, Z. A. Bitovt, and L. K. Khar'kov (Medotov Med. Inst.). *Biochimia* 18, 348-50 (1953).—A photonephelometric method for the detn. of Zn in as little as 0.2 ml. of blood, which takes 2-2.5 hrs. to complete, is based upon the reaction which readily takes place between Zn and dianitrophenylmethylnethane in the presence of SCN<sup>-</sup> in acid soln. Prepn. of dianitrophenylmethylnethane chloride: Dissolve 5 g. antipyrine in a small vol. H<sub>2</sub>O; add 1-2 ml. HCl (d. 1.10) and 1-2 ml. Cl<sub>2</sub>CHO. Heat over water bath for 30-40 min. and cool. A cryst. mass will form which should be recrystd. from H<sub>2</sub>O. Thoroughly dry in a desicator. Prepn. of the reagent: Dissolve 1.52 g. NH<sub>4</sub>SCN in 28 ml. doubly distd. H<sub>2</sub>O; now add with const. stirring 1 ml. 2% alc. soln. of dianitrophenylmethylnethane, filter through paper previously washed twice with doubly distd. H<sub>2</sub>O. The resultant is a clear soln. of the reagent. The procedure: Place 0.2 ml. of the blood into a quartz Kjeldahl flask, add 1 ml. concd. H<sub>2</sub>SO<sub>4</sub>, add perhydrol as catalyst and digest as usual. Wash into a Pt dish with doubly distd. H<sub>2</sub>O. Evap. to dryness below 400° and remove all traces of SO<sub>4</sub>. To the dry residue add 0.3 ml. N HCl, 9.7 ml. doubly distd. H<sub>2</sub>O and 0.03-0.05 g. ascorbic acid or 0.2 g. of hydroquinone. Shake well and pass through filter paper (previously washed as above) into a test tube. Take 5 ml. of the filtrate and add to it 9 ml. of the Zn reagent, mix, and allow to stand for 15 min. for max. development of turbidity. Zero point on the nephelometer is established as follows: Take 9.7 ml. doubly distd. H<sub>2</sub>O add to this 0.3 ml. N HCl, 0.03-0.05 g. ascorbic acid or 0.2 g. hydroquinone and wait for soln. to clear. Divide into 2 equal parts and add to each 9 ml. of the Zn reagent, mix, let stand for 15 min., then establish the nephelometric zero point. Now add to one of the tubes the soln. prepd. for testing and make nephelometric reading. A nomographic curve of standard values is presented. Use either quartz or Pt dishes exclusively.

B. S. Levine

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CIA-RDP86-00513R000205410019-9"

*DITOV, Z.H.*

AUTHORS: Kumov, V. I., Bitovt, Z. A., Pesis, A. S. 78-3-5-20/39

TITLE: Complex Compounds of Bivalent Metals With  $\beta$ -Oxy- $\alpha$ -Naphth-aldehyde (Kompleksnyye soyedineniya nekotorykh dvuhvalentnykh metallov s  $\beta$ -oksi- $\alpha$ -naftoynam al'degidom)

PERIODICAL: Zhurnal Neorganicheskoy Khimii, 1958, Vol 3, Nr 5, pp. 1181 - 1184 (USSR)

ABSTRACT: Interior complexes of bivalent metals as:  
 $Cu^{2+}$ ,  $Mg^{2+}$ ,  $Be^{2+}$ ,  $Ca^{2+}$ ,  $Sr^{2+}$ ,  $Ba^{2+}$ ,  $Zn^{2+}$ ,  $Mn^{2+}$ ,  $Ni^{2+}$ ,  $Co^{2+}$ ,  $Pd^{2+}$  with  $\beta$ -oxy- $\alpha$ -naphthaldehyde were produced from an alcoholic alkaline medium. The complexes have the following general formula:  
 $(C_{11}H_7O_2)_2 Me$   
or  $(C_{11}H_7O_2)_2 Me \cdot xH_2O$ , where Me denotes the above-mentioned bivalent metals. The reaction proceeds in cold as well as in heat.

Card 1/2

78-3-5-20/39

**Complex Compounds of Bivalent Metals With  $\beta$ -Oxy- $\alpha$ -Naphthalaldehyde**

New complex compounds of strontium, calcium, barium, zinc, manganese, cobalt, nickel and palladium were produced with oxy-naphthalaldehyde. The produced compounds are little soluble or almost insoluble in water; some of them are soluble in alcohol. The complexes do not change in the cold ~~under~~ action of 2 n  $H_2SO_4$ ; however, in heating, they decompose under separation of aldehyde. Under action of 2n NaOH in the cold, they are stable; however, in heating, they are soluble. These complexes differ from each other by their crystalline form. This difference can be used for microscopic analysis. There are 1 figure, 1 table, and 6 references, 4 of which are Soviet.

SUBMITTED: April 4, 1957

AVAILABLE: Library of Congress

Card 2/2      1. Complex compounds--Production    2. Complex compounds--Properties  
                  3. Oxy-naphthalaldehyde--Chemical reactions

BITOV, Z. A.

AUTHORS: Gusev, S. I., Bitovt, Z. A. 75-13-3-12/27

TITLE: The Determination of Zinc With Diantipyrimethylmethane by the Nephelometric Method (K opredeleniyu tsinka diantipirilmetylmetanom nefelometricheskim metodom )

PERIODICAL: Zhurnal analiticheskoy khimii, 1958, Vol 13, Nr 3, pp. 323 - 326 (USSR)

ABSTRACT: In form of the complex  $[Zn(SCN)_4]^{2-}$ , diantipyrimethylmethane, as well as some other derivatives of pyrazolon, can act as very sensitive reagents to zinc. With many organic ammonium-cations this anion forms difficultly soluble compounds (Ref 2). Yatsimirskiy (Ref 3) found, that to precipitate anions with a large inside radius such cations are most suitable as also possess a sufficiently large inside radius. Kuznetsov (Ref 4) found color reactions in fixed phase with organic color bases for the anion  $[Zn(SCN)_4]^{2-}$ . In the paper concerned the synthesis and characteristics of the tetrarhodanzincate of diantipyrimethylmethane are described with great accuracy, and the optimal conditions for the nephelometric determination of zinc according to this me-

Card 1/3

The Determination of Zinc With Diantipyrimethylmethane by the Nephelometric Method.

75-13-3-12/27

thod are given. The investigations led to setting up of the following reaction equation for the formation of the difficultly soluble zinc complex:  $2C_{11}H_{11}ON_2 \cdot CH(CH_3)_2 \cdot C_{11}H_{11}ON_2 + ZnCl_2 + 2HCl + 4NH_4SCN = \{ [C_{11}H_{11}ON_2 \cdot CH(CH_3)_2 \cdot C_{11}H_{11}ON_2]_2 Zn(SCN)_4 \} + 4NH_4Cl$ . Formation therefore takes place during the reaction of zinc ions with diantipyrimethylmethane and with rhodanides in an acid solution. The complex formed after this reaction is able to cause continued turbidity in highly dilute aqueous solutions. This fact was used for a nephelometric determination method for zinc. The sensitivity of detection is 0,09 µg zinc per ml. With  $Mg^{2+}$ ,  $Al^{3+}$ ,  $Cu^{2+}$ ,  $Fe^{3+}$  and  $Mn^{2+}$  the reagent does not cause any turbidity under the same conditions of determination. The presence of cations of the 1-st and 2-nd analytic group does not hinder the determination of zinc. Neither does the presence of quantities up to 100 µg manganese, 100 µg aluminum, 1µg copper, 5 µg nickel and 5µg cobalt in 1 ml of the solution hinder the determination. Small quantities of trivalent Fe (up to 10 µg/ml) can be reduced to the divalent stage with the aid

Card 2/3

The Determination of Zinc With Diantipyrimethyl-methane by the Nephelometric Method

75-13-3-12/27

of ascorbic acid or of hydrochinone. Divalent copper is converted into a colorless complex with the aid of thiourea, if it is present in larger quantities than 1  $\mu\text{g}/\text{ml}$  of the solution. The method described here has been used for the photonephelometric determination of zinc in alloys, sewage (waste waters) and in spring water. In the determination of alloys there are no greater errors than  $\pm 10\%$  of the determination result. Determination of zinc in the materials named is described in full detail. There are 1 figure, 7 tables and 5 references, 3 of which are Soviet.

ASSOCIATION: Permskiy meditsinskiy institut (Perm' Medical Institute)

SUBMITTED: April 2, 1956

1. Zinc--Determination

Card 3/3

PESIS, A.S.; BITOVY, Z.A.

Determination of palladium with  $\alpha$ -hydroxy- $\alpha$ -naphthyl aldehyde. Zhur.  
anal.khim. 15 no.2:200-202 Mr-Ap '60. (MIRA 13:7)

1. Permskiy meditsinskiy institut.  
(Palladium--Analaysis)

GUSEV, S.I.; SOKOLOVA, Ye.V.; BITOVY, Z.A.

Photometric determination of magnesium with the pieraminazo  
reagent. Zhur.anal.khim. 16 no.6:674-678 N-D '61.

(MIRA 14:12)

1. Perm State Medical Institute,  
(Magnesium Analysis)

FRUMKIN, A.N., akademik; KAGANOVICH, R.I.; BIT-POPOVA, E.S.

Adsorption of aromatic and hydroaromatic compounds at the  
mercury - solution interface. Dokl. AN SSSR 141 no.3:670-673  
N '61.  
(MIRA 14:11)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.  
(Aromatic compounds)  
(Adsorption)  
(Mercury)

"APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205410019-9

BITRAKOV, Dimitar

Use of the m-order moments in the determination of influence  
lines on a continuous girder. God sbor teh Univ Skopje 4:43-62  
'59/61.

APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205410019-9"

BITRAKOV, Dimitar

Influential lines in continuous girders with variable cross sections.  
God zbor teh Univ Skopje 5 no.5:17-32 '63.

**BITRI, Pullumb**

The Budd-Chiari syndrome. Bul. univ. shtet. Tirane[Mjek] 4:  
73-78 '62.

(HEPATIC VEIN THROMBOSIS)

HOXHA, F., prof.; CANI, P., prof.; BITRI, P.; BURNAZI, P.; ELEZI, B.

A case of successfully operated pheochromocytoma. Bul.Univ.  
Shtet.Tirane no.3/4:66-73 '63.

1. Katedra e kirurgjise, patologjise hospitaliere dhe e  
patologjise se per gjitheshme, Universitetit Shteteror te  
Tiranes.

BITRI, Pullumb, Doc.

Periarteritis nodosa as a collagen disease (anatomo-pathologic study of a case). Bul.Univ. Shtet.Tirane no.3/4:81-89 '63.

1. Katedra Patologjise se Pergi, Universitetit Shteteror te Tiranes.

"APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205410019-9

APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205410019-9"

"APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205410019-9

BITSADZE, A. V.

"The so-called Area-Monogenetic Functions," Doklady Akademii Nauk, 49, No 8, 1948

APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205410019-9"

"APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205410019-9

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CIA-RDP86-00513R000205410019-9"

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CIA-RDP86-00513R000205410019-9

APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205410019-9"

BITSADZE, A. V.

PA 192T60

USSR/Mathematics - Boundary-Value Problem 1950

"Uniqueness of Solution of a General Boundary-Value Problem With Mixed-Type Equation," A. V. Bitsadze, Math Inst. Inveni A. M. Razmadze, Tbilisi, Acad Sci Georgian SSR

"Sob Ak Nauk Gruz SSR" Vol XI, No 4, pp 205-209

Solves the general eq. of the mixed type  $u_{xx} + \theta(y)u_{yy} = 0$  where  $\theta(y)$  is not restricted to special partial cases, as in previous solns.

LC

192T60

USSR/Mathematics - Boundary-Value Problem 1950  
(Contd)

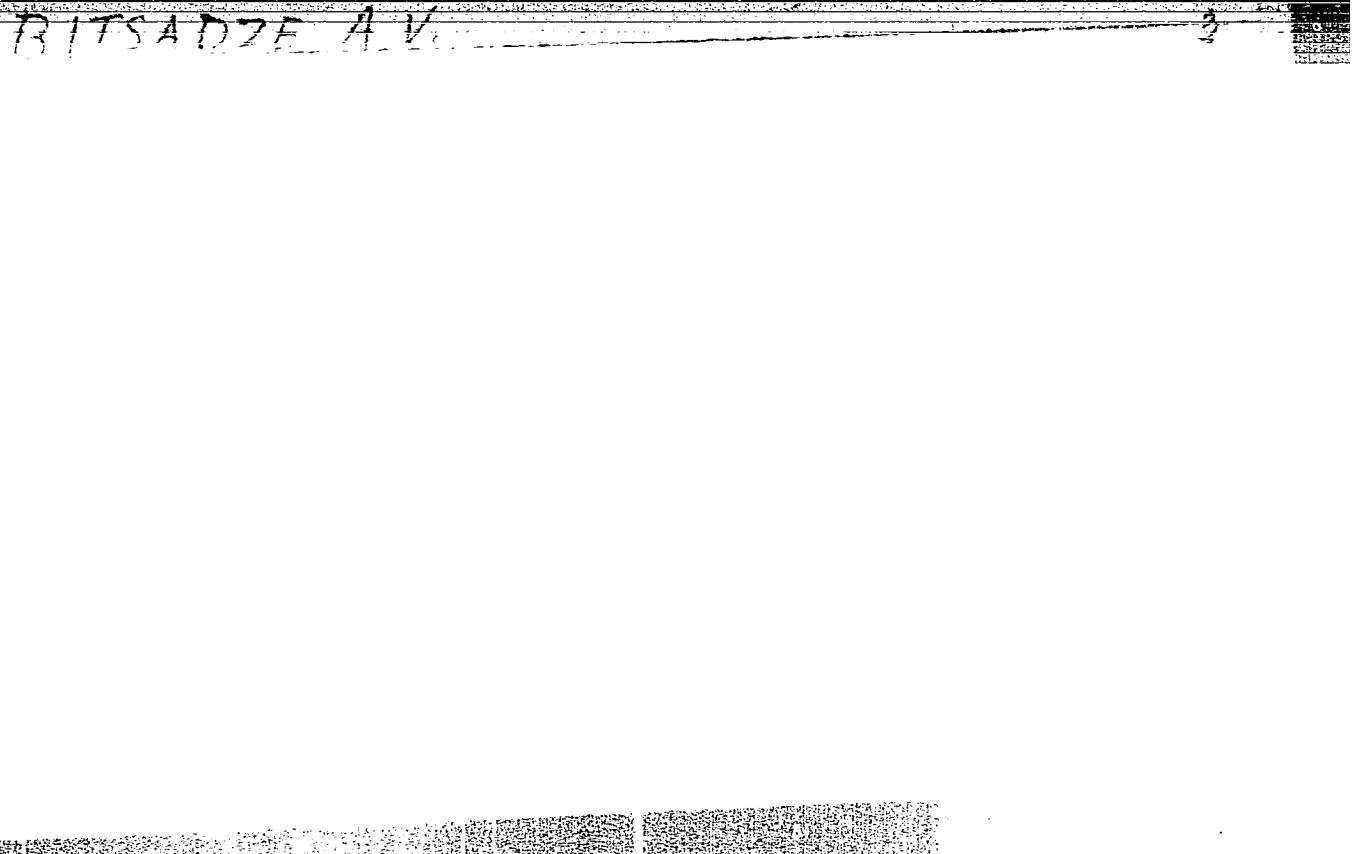
Demonstrates the uniqueness of soln of the boundary-value problem I for certain limitations. Submitted 28 Feb 1950 by I. N. Vekua, Act Mem, Acad Sci. Georgian SSR.

LC

192T60

"APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205410019-9



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"APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205410019-9

APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205410019-9"

BITSADZE, A. V.

"Problem of Equations of the Mixed Type." Sub 21 Jun 51, Mathematics Inst  
imeni V. A. Steklov, Acad Sci USSR.

Dissertations presented for science and engineering degrees in Moscow  
during 1951.

SO: Sum. No. 480, 9 May 55.

BITSADE, A. V.

USSR/Mathematics "Partial Differential Equations"

1 Jul 71  
Vol 1

"General Problem of the Mixed Type," A. V. Bitsadze

"Dok Ak Nauk SSSR" Vol LXXVIII, No 4, pp 621-624

Investigates generalized problem of mixed type for eq  $u_{xx} + t(y)u_{yy} = 0$ , where  $t(y) = 1$  for  $y > 0$  and  $t(y) = -1$  for  $y < 0$ . Particular problems were studied by M. A. Lavrent'ev and Bitsadze earlier ("Dok Ak Nauk SSSR" Vol LXX, No 3, 1950). It is required to find  $u(x,y)$  with certain properties. Submitted 28 Mar 51 by Acad M. A. Lavrent'ev.

184T62

BITSADE, A. V.

USSR/Mathematics - Integrals, Potential Nov/Dec 53

"Three-Dimensional Analog of the Cauchy-type Integral and Certain Applications of It," A. V. Bitsadze  
Iz Ak Nauk SSSR, Ser Mat, Vol 17, No 6, pp 525-538

The theory of one-dimensional integrals of the Cauchy type plays an important role in the solution of so-called two-dimensional problems of mathematical physics (e. g. N. I. Muskhelishvili, Singular Integral Equations (Singulyarnyye Integral'nyye Uravneniya) Moscow-Leningrad Gostekhizdat (State Tech Press), 1946). Here the author constructs an apparatus of two-dimensional Cauchy-type integrals and

274T75

applies apparatus to problems in the theory of Newtonian potential. Presented by Acad S. L. Sobolev, 30 Apr 53.

"APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205410019-9

BITSAZDE, A.V.; PETROVSKIY, I.G., akademik, otvetstvennyy redaktor;  
NIKOL'SKIY, S.M., zamestitel' otvetstvennogo redaktora.

Equations of the mixed type. A.V.Bitsadze. Trudy Mat.inst. 41  
58 p. '53.

(Differential equations, Partial)

APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205410019-9"

BITSADZE, A.V.

Spatial analogue of the Cauchy-type integral and certain of its applications.  
Dokl. AN SSSR 93 no. 3:389-392 N '53.  
(MLRA 6:11)

1. Matematicheskiy institut im. V.A. Steklova Akademii nauk SSSR. Predstavлено  
академиком M.A. Lavrent'yevym. (Integrals) (Spaces, Generalized)

"APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205410019-9

APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205410019-9"

BITSADZE, A. V.

## PHASE I

## TREASURE ISLAND BIBLIOGRAPHICAL REPORT

AID 548 - I

Call No.: AF632686

## BOOK

Author: BITSADZE, A. V.

Full Title: ON THE PROBLEM OF EQUATIONS OF MIXED TYPE

Transliterated Title: K probleme uravneniy smeshannogo tipa

## PUBLISHING DATA

Originating Agency: Academy of Sciences, USSR. Trudy Matematicheskogo  
Instituta imeni V. A. Steklova (works of the Mathematical Institute  
im. V. A. Steklov) XLI

Publishing House: Academy of Sciences, USSR

Editorial Staff  
Responsible Editor: Academician I. G. Petrovskiy; Deputy Responsible  
Editor: Prof. S. M. Nikol'skiy

PURPOSE: Not given

## TEXT DATA

Coverage: In the introduction the author states that several important  
problems of the dynamics of gases are reduced to boundary problems  
with equations of the second order of the mixed type. The domain of  
these equations belongs to the elliptical and hyperbolic types.  
F. Tricomi was the first to discuss their solutions; his results were  
further studied by S. Gellerstedt. Academician M. A. Lavrent'yev in  
studying equations of the mixed type directed attention to a typical

1/2

"APPROVED FOR RELEASE: 06/08/2000

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APPROVED FOR RELEASE: 06/08/2000

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"APPROVED FOR RELEASE: 06/08/2000

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APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205410019-9"

BITSADZE, A.V. BITSADZE, A.V.

SUBJECT USSR/MATHEMATICS/Differential equations CARD 1/2 PG - 649  
 AUTHOR BICADZE A.V.  
 TITLE On the problem of equations of mixed type in more-dimensional regions.  
 PERIODICAL Doklady Akad.Nauk 110, 901-902 (1956)  
 reviewed 3/1957

Let be given the equation of mixed type

$$(1) \quad \Delta u + \operatorname{sgn} t \cdot u_{tt} = 0,$$

where  $\Delta$  is the Laplace operator with respect to the coordinates  $x_1, \dots, x_n$ . Let  $D$  be a region in the space  $(x_1, x_2, \dots, x_n, t)$  which is limited by the sphere  $\mathcal{S}$ :  $x_1^2 + \dots + x_n^2 + t^2 = 1$ ,  $t \geq 0$  and the cones  $K_1$ :  $t = 1 + \sqrt{x_1^2 + \dots + x_n^2}$ ,  $- \frac{1}{2} \leq t \leq 0$  and  $K_2$ :  $t = \sqrt{x_1^2 + \dots + x_n^2} = 0$ ,  $- \frac{1}{2} \leq t < 0$ . Problem: Determine the function  $u(x_1, x_2, \dots, x_n, t)$  which for  $t \neq 0$  is a solution of (1) in  $D$ , which is continuous in  $\overline{D}$ , the partial derivatives of first order of which are continuous in  $\overline{D}$  (at most with exception of  $\sqrt{x_1^2 + \dots + x_n^2} = 1$ ,  $t = 0$  and  $\sqrt{x_1^2 + \dots + x_n^2} = \frac{1}{2}$ ,  $t = -\frac{1}{2}$ ) and which on  $\mathcal{S}$  has the value  $\varphi$  and the value  $\psi$  on  $K_1$ .

Doklady Akad. Nauk 110, 901-902 (1956)

CARD 2/2

PG - 649

The author assumes that  $\psi$  is a given two times differentiable function of  $r = \sqrt{x_1^2 + \dots + x_n^2}$ . For the case of three spatial coordinates he then seeks the solution of the problem among the solutions of (1) which depend on  $r$  and  $t$  only:

$$u(r, t) = \frac{1}{r} \operatorname{Re} \phi(r+it) \quad t > 0$$

$$u(r, t) = \frac{1}{r} [F_1(r+t) + F_2(r-t)] \quad t < 0,$$

where  $\phi$  is an arbitrary holomorphic function and  $F_1$  and  $F_2$  are arbitrary two times differentiable functions. Now the problem is reduced to a function theoretical problem: determination of a function being holomorphic in a certain special region, which satisfies certain boundary conditions. Then the solution can be written explicitly.

INSTITUTION: Math. Inst., Acad. Sci. USSR.

~~BITSADZE, A.V.~~

SCHIFFER, Menahem; SPENCER, Donald C.; SOLOMONSEV, Ye.D. [translator];  
BITSADZE, A.V., red.

[Functionals of finite Riemann surfaces, by Menahem Schiffer and  
Donald C. Spencer. Princeton, N.J., 1954] [Translated from the  
English.] Funktsionalnye na konechnykh rimanovykh poverkhnostyakh.  
Perevod s angliiskogo Ye.D. Solomentseva. Pod red. A.V. Bitsadze.  
Moskva, Izd-vo inostrannoj lit-ry, 1957. 347 p. 27<sup>cm</sup>. (MIRA 11:10)  
(Riemann surfaces)

BITSADZE, A. V.

AUTHOR: BITSADZE A.V. 42-5-6/17

TITLE: On an Elementary Method for the Solution of Some Boundary Value Problems of the Theory of Holomorphic Functions and the Singular Integral Equations Being Connected With Them (Ob odnom elementarnom sposobе resheniya nekotorykh granichnykh zadach teorii golomorfnykh funktsiy i svyazannykh s nimi osobyykh integral'nykh uravneniy)

PERIODICAL: Uspexhi Mat.Nauk, 1957, Vol.12, Nr.5, pp. 185-190 (USSR)

ABSTRACT: The author seeks a holomorphic function  $\phi(z) = u(x,y) + iv(x,y)$  continuous in the semicircle  $\sigma : |2z-1| < 1, \text{Im } z > 0$  which satisfies the conditions  $|u|_{\sigma} = 0, u_x - \lambda u_y = f(x), 0 < x < 1, y = 0, v(0,0) = 0$ , where  $f(x)$  satisfies the Hölder condition. It is assumed that  $u_x$  and  $u_y$  in the neighborhood of  $(0,0)$  and  $(0,1)$  may become infinitely large of the order  $< 1$ . With the aid of well known formulas of the potential theory the author succeeds in obtaining an explicit solution

$$\phi(z) = \frac{e^{-iv}}{\pi i \sqrt{1+\lambda^2}} \int_0^1 \left( \frac{z}{t} \right)^{1-\theta} \left( \frac{1-z}{1-t} \right)^\theta \left( \frac{1}{t-z} - \frac{\text{sgn}}{t+z-2tz} \right) \varphi(t) dt,$$

Card 1/2

On an Elementary Method for the Solution of Some Boundary Value Problems of the Theory of Holomorphic Functions and the Singular Integral Equations Being Connected With Them 42-5-6/17

where  $\varphi = \int_0^x f(t)dt$ ,  $\theta = -\frac{2\varphi}{\pi}$  for  $\lambda > 0$  and  $\theta = \frac{\pi - 2\varphi}{\pi}$  for  $\lambda < 0$ ,

$\theta = \text{arc tg } (-\lambda)$ . At the same time he obtains the solution of the integral equation

$$\lambda v(x) + \frac{1}{\pi} \int_0^1 \left( \frac{1}{t-x} + \frac{1-2t}{t+x-2tx} \right) v(t) dt = -f(x).$$

This integral equation is equivalent to the problem formulated above if it is put  $v_x \equiv u_y(x, 0)$ .

Beside of the mentioned problem two further problems are solved explicitly with the aid of the potential theory.

Three Soviet and 1 foreign references are quoted.

SUBMITTED: January 18, 1957  
AVAILABLE: Library of Congress

Card 2/2 1. Topology 2. Integral equations 3. Holomorphic functions-Theory

*BITSADZE, A.A.*

26-10-38/44

AUTHOR: Bitsadze, A.A., Doctor of Physicomathematical Sciences, Moscow

TITLE: A Monograph on Mathematics (Monografiya po matematike)

PERIODICAL: Priroda, 1957, No 10, pp 121-122 (USSR)

ABSTRACT: The publishing house of the AN USSR published in 1956 a three-volume work entitled: "Mathematics, its Contents, Methods and Meaning" (Matematika, yeye soderzhanie, metody, znachenie). The monograph's objective is to acquaint the reader with mathematics as a whole, to understand the elements of mathematical analysis, analytical geometry, algebra and the theory of ordinary differential equations, i.e., the principles of "higher mathematics". It gives the qualified reader an idea of the present status of mathematics and the future possibilities of development.

AVAILABLE: Library of Congress

Card 1/1

BITSADZE, A.V.

Uniqueness of the solution of Frankl's problem related to  
Chaplygin's equation. Dokl. AN SSSR 112 no.3:375-376 Ja  
'57.

(MLRA 10:4)

1. Matematicheskiy institut im. V.A. Steklova Akademii nauk SSSR.  
Predstavлено академиком M.A. Lavrent'evym.  
(Equations, Theory of) (Integral equations)

BITSADZE, A.V.

SUBJECT USSR/MATHEMATICS/Differential equations CARD 1/3 PG - 872  
 AUTHOR BICADZE A.V.  
 TITLE On elliptic systems of partial differential equations of  
 second order.  
 PERIODICAL Doklady Akad. Nauk 112, 983-986 (1957)  
 reviewed 6/1957

Let be given the elliptic system

$$Au_{xx} + 2Bu_{xy} + Cu_{yy} + A_1u_x + B_1u_y + C_1u = 0,$$

where  $A, B, \dots$  are given, continuous, real matrices of  $n$ -th order in a domain  $D_1$  of the  $xy$ -plane and  $u = (u_1, \dots, u_n)$  is the sought vector. If the quadratic form

$$\eta^T \gamma + \gamma^T \xi + \xi^T \gamma$$

with  $\gamma = (\gamma_1, \gamma_2, \dots, \gamma_n)$  and  $\xi = (\xi_1, \xi_2, \dots, \xi_n)$  is positive definite in  $D_1$ , then for the Dirichlet problem (to find a solution being regular in  $D \subset D_1$ , which assumes given continuous values  $f$  on the boundary  $\Gamma$ ) there holds

Doklady Akad. Nauk 112, 983-986 (1957)

CARD 2/3

PG - 872

the alternative: the non-homogeneous problem is always solvable if the corresponding homogeneous problem admits only the trivial solution. For the system

$$(1) \quad Lu = (Au_x + Bu_y)_x + (Bu_x + Cu_y)_y + A_1 u_x + B_1 u_y + C_1 u = 0$$

with symmetrical  $A_1$  and  $B_1$ , the latter appears if

$$\eta(A_{1x} + B_{1y} - 2C_1)\eta \geq 0 \quad (x, y) \in D$$

(generalized condition of Pini, Rend. Sem. Mat. Univ. Padova 22, 265, (1953)). Let  $-C_1$  be positive definite,  $A = \alpha(x, y)\mathbb{E}$ ,  $B = 0$ ,  $C = \beta(x, y)\mathbb{E}$ ,  $A_1 = \alpha_1(x, y)\mathbb{E}$ ,  $B_1 = \beta_1(x, y)\mathbb{E}$ , where  $\alpha > 0$ ,  $\beta > 0$ ,  $\alpha_1, \beta_1$  are given functions (scalars). Then the length of the solution vector of (1) being regular in  $D$ , has no maximum inside of  $D$ . Some example illustrate the mentioned results. Furthermore let be given the elliptic system

$$(2) \quad Au_{xx} + 2Bu_{xy} + Cu_{yy} = 0$$

with constant coefficients. Let  $\alpha_1, \dots, \alpha_m$ ,  $\bar{\alpha}_1, \dots, \bar{\alpha}_m$  be the roots of the characteristic equation  $\det |A + 2B\lambda + C\lambda^2| = 0$  and  $k_1, \dots, k_m$  its

Doklady Akad. Nauk 112, 983-986 (1957)

CARD 3/3

PG - 872

multiplicities. All regular solutions of (2) can be represented in the form

$$(3) \quad u = \operatorname{Re} \sum_{j=1}^p \sum_{l=1}^{k_j} \sum_{m=0}^{l-1} c_{lm}^{(j)} z_j^{-m} \varphi_{jl}^{(m)} (z_j),$$

where the  $\varphi_{jl}$  are arbitrary holomorphic functions of  $z_j = x + \alpha_j y$ , the upper index in  $\varphi_{jl}^{(m)}$  denotes the order of the derivative with respect to  $z_j$  and  $c_{lm}^{(j)}$  are fixed vectors, for the determination of which linear algebraic systems have to be solved.

INSTITUTION: Math. Inst. Acad. Sci. USSR. M. V. A. Steklov

"APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205410019-9

BITSADZE, A.V.

Correction. Usp. mat. nauk 13 no.2:270 Mr-Ap '58.  
(Functions of complex variables) (MIRA 11:4)

APPROVED FOR RELEASE: 06/08/2000

CIA-RDP86-00513R000205410019-9"

AUTHOR: Ritsadze, A. V. Corresponding Member  
of the Academy of Sciences of the USSR SOV/20-121-1-1/2

TITLE: The Invertiveness of Dirichlet's Problem for Equations of Mixed Type in Mixed Regions (Nekorrektnost' zadachi Diriklita dlya uravneniya smeshannogo tipa v smeshannykh oblastiyakh)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 2, pp 167-170 (USSR)

ABSTRACT: Let D be a simply connected region which is bounded by a Jordan curve  $\gamma'$ , lying in the upper half plane, with the end points A(0,0), B(1,0) and by the curves of continuous curvature  $y = -\gamma(x)$ ,  $y = -\gamma_1(x)$ . The curves  $\gamma'$  and  $\gamma_1$  begin in A and B, and it is

$$\gamma > 0, \quad \gamma_1 > 0, \quad 0 < \gamma(x) < 1, \quad 0 < -\gamma_1(x) < 1.$$

The author shows that in D the Dirichlet problem for the Lavrent'ev equation

$$u_{xx} + a u_{xy} + u_{yy} = 0$$

is always incorrect (independent of the magnitude and form

Card 1/2

The Investigation of Uniqueness Problem for Equations  
of Mixed Type in Mixed Regions      SOV/20-122-1-1/42

of the hyperbolic part of  $\Omega$ ).

ASSOCIATION: Matematicheskij Institut imeni V.A. Steklova Akademii nauk  
SSSR (Mathematical Institute imeni V.A. Steklov of the Academy  
of Sciences of the USSR)

SUBMITTED: July 10, 1959

Card 2/2

PHASE I BOOK EXPLOITATION S v/3568

Bitsadze, Andrey Vasil'yevich

Uravneniya smeshannogo tipa (Equations of Mixed Type) Moscow, Izd-vo AN SSSR, 1959. 163 p. (Series: Itogi nauki; fiziko-matematicheskiye nauki, 2) Errata slip inserted. 2,200 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut nauchno-tehnicheskoy informatsii.

Ed.: S. M. Nikol'skiy; Ed. of Publishing House: A. Z. Ryvkin; Tech. Ed.: T. V. Polyakova.

PURPOSE: This book is intended for scientists interested in pure and applied mathematics.

COVERAGE: This book discusses the theory of mixed type equations, one of the central problems of the theory of partial differential equations. The book is based on a series of reports given by the author in 1957 and early 1958 in the Chinese People's Republic on certain problems of the theory of mixed type equations. The author thanks M. A. Lavrent'yev, I. N. Vekua, L. D. Kudryavtsev, U Sin-Mo, M. M. Smirnov, S. A. Tersenov, and A. Z. Ryvkin. There are

Card 1/4

Equations of Mixed Type (Cont.)

SOV/3568

108 references: 64 Soviet, 14 English, 14 French, 5 German, and 11 Italian.

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Card 2/4

## Equations of Mixed Type (Cont.)

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## Equations of Mixed Type (Cont.)

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1961. 577 p.  
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1. Akademiya nauk SSSR.  
(Mechanics, Analytic) (Elastic solids)

S/044/62/000/008/023/073  
C111/0333

AUTHOR: Bitsadze, A. V.

TITLE: On equations of the mixed composition type

PERIODICAL: Referativnyy zhurnal, Matematika, no. 8, 1962, 56,  
abstract 8B249. ("Nekotoryye probl. matem. i mekhan."  
Novosibirsk, Sib. otd. AN SSSR, 1961, 47-49)

TEXT: A number of boundary value problems are considered for the  
equation

$$\partial Tu / \partial x = 0, \quad Tu = y u_{xx} + u_{yy} \quad (1)$$

in the domain  $D = D_1 + D_2 + AB$ ;  $D_1$  is a simple connected domain which  
is limited by the segment  $A(-1,0) \cup B(1,0)$  of the OX axis and the smooth  
Jordan arc situated in the half-plane  $y > 0$ , where  $\sigma$  goes from A to B and  
is cut by the straight line  $y = c$ ,  $0 \leq c < h$  in only two points;  $D_2$  is  
limited by AB and the two characteristics AC and BC, which belong to  
different families of the equation  $Tu = 0$ . The straight line  $y = h$   
touches  $\sigma$  at only one point  $C_1$ ; the straight lines  $y = c$ ,  $c > h$  have no  
intersections with  $\sigma$ . In the boundary value problems in question the  
solution of (1) which is regular in the open domain and continuous in the  
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S/044/62/000/008/023/073  
0111/C333

On equations of the mixed . . .  
 closed domain is determined for the following boundary value conditions:  
 In problem A -- in domain  $D_1$ , with given

$$u|_{\delta'} = f_1, u|_{AB} = f_2, \frac{\partial u}{\partial N}|_{\delta'_1} = \varphi$$

in problem B -- in domain  $D_2$ , with given

$$u|_{AB} = f_2; u|_{AC} = \psi_1, \frac{\partial u}{\partial N}|_{AC} = \psi_2$$

in problem C -- in domain D with given

$$u|_{CA+\delta'} = f, \frac{\partial u}{\partial N}|_{CAC_1} = \varphi.$$

Here  $\delta'_1$  is the part  $AC_1$  of  $\delta'$ ;  $N$  is the direction of the inner normal;  
 $f_1, f_2, \varphi$  are continuous, and the other functions are sufficiently smooth.  
 The uniqueness of the solution to this problem is determined under the  
 condition  $dx/dN \neq 0$  along  $AC$  with the exception of point  $C_1$ , where the  
 following representation of an arbitrary regular solution of (1) is used  
 $u(x,y) = u^T(x,y) + \omega(y)$ , where  $u^T$  is the regular solution of  $Tu = 0$  and

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$\omega(y)$  is an arbitrary twice continuous differentiable function. It is pointed out that the existence proof for this problem leads to the solution of one-dimensional integral equations with singular Cauchy kernels; these equations can be solved with the help of available theories on singular integral equations.

[Abstracter's note: Complete translation.]

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S/199/61/002/001/002/008  
B112/B218

AUTHORS: Bitsadze, A. V., Salakhitdinov, M. S.

TITLE: Theory of equations of the mixed-composed type

PERIODICAL: Sibirskiy matematicheskiy zhurnal, v. 2, no. 1, 1961, 7-19

TEXT: Equations of the mixed type are of the elliptic type in one part of the domain considered, of the hyperbolic type in the other part, and of the parabolic type on the boundary of the two domains. Such an equation is that of Tricomi:

$Tu = y \frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = 0$ . In 1933, Hadamard has studied partial

differential equations of the composed type, i.e., equations having both complex and real characteristic directions at all points of the domain considered. The authors have now studied the differential equation:

$\frac{\partial}{\partial x} (Tu) = 0$ . This equation is of the mixed-composed type, i.e., both mixed and composed type. Its regular solutions are composed of a solution  $u_T(x,y)$  of the equation  $Tu = 0$ , and of an arbitrary twice continuously differentiable

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function  $\omega(y)$ :  $u(x,y) = u_T(x,y) + \omega(y)$ . The authors formulate and solve five boundary problems for the equation:  $\frac{\partial}{\partial x} (Tu) = 0$  in the domains  $D_1$ ,  $D_2$ , and  $D = D_1 \cup D_2$  of the  $x,y$ -plane which are explained in the following way:  $D_1$  is bounded by the  $x$ -intercept lying between the points  $A(-1,0)$  and  $B(1,0)$ , and by an arc of a curve  $\sigma$ , which takes its course in the semi-plane  $y > 0$  and has the points  $A$  and  $B$  as end points.  $D_2$  is bounded by  $AB$  and the two characteristic arcs  $AC$ :

$x = (2/3)(-y)^{3/2} - 1$  and  $BC$ ;  $x = -(2/3)(-y)^{3/2} + 1$  of the equation

$\frac{\partial}{\partial x} (Tu) = 0$ . The boundary problems considered are uniquely solvable if  $\sigma$  satisfies certain conditions, especially if  $\sigma$  is in agreement with the so-called normal contour:  $x^2 + 4/9 y^3 = 1$ ,  $y > 0$ . The authors mention the equation

$\frac{\partial}{\partial x} Lu = 0$  with Lavrent'yev's differential operator:  $L = \frac{\partial^2}{\partial x^2} + \operatorname{sgn} y \frac{\partial^2}{\partial y^2}$  as

a simple example of an equation of the mixed-composed type. There are 8 references: 1 Soviet-bloc and 7 non-Soviet-bloc.

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